Vol. XI. No. 7. July 15, 1914

THE

PSYCHOLOGICAL BULLETIN

GENERAL REVIEWS

VISUAL SPACE

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Degenkolb (**4, 5**) treats of the personal differences which appear in attempting to bisect a line—personal differences which promise, he believes, to have value for the diagnosis of cerebral disturbances. The line to be bisected is set at various angles upon a wall, or the top of a table and a fresh determination is made for each of the 18 or 36 positions which it occupies as it boxes the compass. And the results he thus obtains for each person are expressed in the form of an interesting graph, made by plotting in all directions around a central point the amount and direction of the error for each of the angles used in the original experiments. A line connecting these points gives a surface of various sizes and shapes, and with various directions of elongation and of nicking,—a surface which he calls the "*Raumumgangsfeld*."

He has experimented upon a number of patients with symptoms of disturbance of the aural labyrinth, and upon normal persons whose labyrinths have been artificially stimulated by rotation or by the galvanic current, and finds certain characteristic developments of the graph according to the nature and severity of the disturbance. The form of this graph or "field" differs for the same person under various conditions, and yet maintains a notable constancy of form—although not of size or of direction of elongation —for the same person. Persons are grouped by him according to the types of field which they display. The form of the "field" is modified not merely by the disturbances already noted, but ac-

cording as the bisection is made by the subject's right hand or by his left hand, or by the experimenter's hand guided by the word of the subject; it is modified also by the position of the head in relation to the neck and trunk as well as by the position of these other parts of the body. Indeed Degenkolb claims for his method a remarkable nicety and sensitiveness. These and various other normal and pathological observations point, so Degenkolb believes, to the existence of a special centripetal tract assumed by Sachs, passing to the parietal lobe,—a tract not concerned with light or color but only with sensations from the ocular muscles, the spinal joints, and the vestibular nerve. This hypothetical center in the parietal lobe, in which are represented (he supposes) the "goals" of all our ocular movements, Degenkolb proposes to call the "parietal retina."

Osborn, an expert on the identification of handwriting and of legal documents generally, sets forth in a brief and popular way, (13) the differences which observers show in the recognition and discrimination of such forms as are found in handwriting and typing. Material is described and illustrated for testing persons on their ability rapidly to select specimens that are from an identical source and to discriminate them from specimens from other sources. With different persons the number of the errors made and the length of time required varies greatly.

Mayfield (12) applies to the visual field the statistical method used by Urban with lifted weights. Experimenting upon the visual comparison of lines, he finds that some persons underestimate, while others overestimate; and therefore he can find no constant direction of error. The discriminative threshold for such lines has a mean amount of about 1.25 to 2.0 per cent. of the standard line he used.

Hoppeler (10) sought to determine the elevation at which one would judge a point of light in a dark room to be horizontal to the eye. With twenty observers of various ages and degrees of education, he found this elevation to be in general actually below the horizontal, the limits of the subjective horizon for all his observers being 2° above and 5° below the reality. The author would explain this result by the fact that the ocular muscles find their state of rest when the line of sight is slightly lowered,—that is, when the eye is in "the primary position" of the eye; and also because there is so little practical need of estimating by eye alone the precise horizontal direction.

Angell and Root (2) have ingeniously measured the distance to

which the after-image is projected in the field of the closed eyes. With the different persons on whom they experimented, this distance varies from about 6 cm. to 17 cm. Angell (1) discusses the discrepancy between these findings and those of Meyerhausen, whose measure of the distance was 2 meters. Angell, even when using Meyerhausen's method, is unable to arrive at any such result, nor is he able to explain the discrepancy. He lays some stress on the fact, however, that in Meyerhausen's case convergence seemed to have played a far more important part than it did with any of Angell's own observers.

A number of experiments of the year are as usual concerned with binocular depth. Dufour who annually reports facts, many of which are well known, this year emphasizes (6, 8) the amount of "play" which there is in what we call the "identity" of retinal points; he finds that impressions upon the two retinæ may fall upon points that are without geometrical or anatomical correspondence, and yet be binocularly fused. Such fusion sometimes occurs after the surgical removal of the lens from one eye and when there has been a correction by common glasses; although now the images in the two eyes differ in size. He also takes stereoscopic cards and rotates one of the views in its own plane to find the limit beyond which the two views can no longer be combined. The eye, he finds, will tolerate a rotation of about 10° in either direction, a total of 20°; and this he adduces to show how little of anatomic or geometrical precision there is in the "identity" of retinal points. He seems quite to overlook how much of this angle is compensated by actual torsion of the eye-ball, and cannot therefore represent the retinal disparity which binocular fusion must overcome. He finds, however, that this angular limit beyond which the stereoscopic views cease to combine varies from day today, is markedly increased by practice, and is diminished by fatigue. The rôle played by fatigue in producing diplopia in his own case when there is latent heterophoria is also reported by Dufour (7).

Binocular fusion with no retinal disparity whatever,—the converse of that with which Dufour was mainly concerned—is the theme of Werner's report (14). Presenting to the two eyes patterns that are geometrically identical, he rediscovers the well-known fact that the apparent distance and size of the resultant object is affected by changes of convergence. When the patterns are such as to permit binocular fusion of certain parts only, so that these appear sharp and the rest is blurred, these sharper lines obtain what he

calls a "purely optical," as distinguished from an "oculomotor" stereoscopy.

Blumenfeld's investigation (3) is a development, in several new ways, of Hillebrand's "*Allee*" experiment, which has for years been a mild storm-center. The reader will recollect that when an observer looks between two rows of objects going off into the distance from his eye, and attempts to arrange these so that they shall seem to form two exactly parallel rows, certain remarkable errors occur, which for Hillebrand indicate how important is convergence for the estimation of the distance-apart of the successive pairs of objects that form the "*Allee*." Blumenfeld, after a historical survey, sets forth his own experiments which bring out afresh the fact that the two rows of objects must actually diverge as they go into the distance if they are to seem parallel; and moreover must be not straight lines, but curved; Blumenfeld finds that the direction of the curvature, however, differs with the mode of judging the relation of the receding objects, being mutually *inward* at the center when the subject attends to the general direction of the rows and tries to make these directions the same; but the curvature is *outward* if he tries to compare, one by one, the distance between the successive pairs of objects forming the two rows, and to make these distances equal. Since the form of the resultant "*Allee*" is thus so dependent upon the character of the attentive act, Blumenfeld contends (and, it would seem, justly) that it is idle to make convergence the sole determiner. Less important, although adduced by Blumenfeld to support his position, are his farther findings that the form of the "*Allee*" is influenced by the position of the eyes,—whether they are in the plane of the objects to be compared or are above them; and moreover shows the same general kind of variation when the observer uses but one eye as when he uses both. Blumenfeld is on the whole therefore opposed to Hillebrand's inferences, and looks sympathetically at the general method of explanation that makes much of the attention, as in the paper by Jaensch reported a year ago. Blumenfeld points out the interesting mathematical incongruity in his observer's judgments, inasmuch as an arrangement of points giving apparently parallel lines is nevertheless not seen to the observer to be equidistant; that is, the judgment of the *direction* of the rows does not exactly harmonize with the judgment of the lateral *distance* of their members.

Katz (11) found that in looking at paintings with a certain friend the depth-interpretation of the two observers was markedly

different. This led Katz to careful experiment upon his companion, using various drawings that in different degrees suggest a third dimension. The outcome is, that this subject is far readier than are most observers to accept such figures as "flat." And yet by willing it he can give them an exceptionally vivid plastic character. There is in his case an absence of the spontaneous interpretation of the signs of depth, possibly connected with the fact that he is a visualizer of a high order, but perhaps rather due to his special mode of attention. Katz points out the similarity of these findings to those of Karpinska, reported a year ago, who, working now with identical, now with disparate stereoscopic cards, found some individuals far more prone than others to give to these pictures a plastic form. Katz believes that his results tend to reduce the importance of lateral disparity for the perception of depth.

Dunan's long contribution (9) deals more with the psychology and even the metaphysics of space in general, and more especially with the long-standing conflict between Nativism and Empiricism. Defining Empiricism as the assumption that a given extension is perceived successively and by putting together the parts, while Nativism is the view that in our representation the whole exists before the parts, he surveys the discussion of space in modern philosophy. Expressing finally his own belief, he finds that in every attempt to define position—the position, say, where the *Titanic* went down—we push outward step by step toward a purely ideal system of positions which do not "exist" at all and yet are by no means mere nonentities. This ideal non-existent absolute space is therefore logically presupposed by us in all existent and empirical spaces. Thus he arrives at and defends anew a form of "Nativism."

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TACTUAL AND KINÆSTHETIC SPACE

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Ponzo is continuing his work on cutaneous localization. He presents a study (**4**, **8**) of the localization of sensations of warmth and cold. Selected cold and warmth spots on the finger, forearm, and upper arm were localized by the Weber method, and the results compared with similar tests in the localization of pressure and of pain sensations. The results show that (contrary to the usual view) pain is the most accurately localized, next pressure, then cold, and lastly warmth. For all four sensation qualities, the errors of localization are both more numerous and larger in the longitudinal than in the transverse direction. The author calls attention to the fact that this agrees in general with his earlier findings on the error of localization in the intercostal spaces,[1] since in the arm the largest nerve-trunks run in the longitudinal direction. Nervous innervation in the forearm is, however, much more complex than that of the intercostal spaces. Ponzo's study (**7**) of the effects of practice on the accuracy of localization merely repeats material already reported in another place.[2]

The same author (**5**, **6**) attacks the problem as to whether or not a tactile sensation comes into consciousness with its "local sign" already given, i. e., whether the consciousness of the localization of a touch sensation is simultaneous with the consciousness of the quality

[1] *Arch. ital. de biol.*, 1911, **56**, 193–201; reviewed in this BULLETIN, 1913, **10**, 259–261.

[2] *Riv. di. psicol.*, 1912, **8**, 390–407, reviewed in this BULLETIN, 1913, **10**, 260.

of the sensation, or whether it involves a more complicated process, and therefore comes into consciousness after the sensation itself has been registered. His method is that of measuring reaction times: the length of time taken for a "localization reaction" is compared with that required for a simple sensorial reaction to the tactile stimulus. In the sensorial reaction the subject was instructed to react to the "tactile quality of the sensation"; in the localization reaction, he reacted "at the moment of the appearance in his consciousness of the representation of the space touched." Subjectively both of the two subjects tested thought that the tactile impression itself and the awareness of its localization came into consciousness simultaneously, but the numerical results show that the localization reaction is slower than the sensorial by an average of about 50 σ. Further experiments show that the reaction time for distinguishing two points further apart than the two-point threshold is longer than the simple sensorial reaction, but shorter than the localization reaction. Ponzo concludes that the process of distinguishing between two sensations in more complex than that of sensing one sensation, and the process of localizing a sensation is still more complex. He thinks that "the results of the experiments exclude . . . the possibility of a localization simultaneous with the simple perception of a tactual sensation," but notes that the problem of the localization of a touch sensation is entirely distinct from that of the spatial nature of the sensation itself. The former has to do with spatial *order*, and probably involves rather complex associations; the latter with the bare spatialness of a touch sensation, which may well come into consciousness simultaneously with the quality of the sensation.

Benussi (2) offers a preliminary investigation of illusions of movement in the field of touch sensations, analogous to the well-known ones in the visual field. Two points of the skin (4 to 10 cm. apart) were stimulated successively, with intervals between the two stimulations varying from 2 sec. to 1/20 sec. With the long intervals the subject felt two distinct sensations, referred to two different sources. With the shortest intervals either he felt one sensation which apparently lay between the two points stimulated, and sometimes seemed to be revolving there in a tiny circle, or else he had the impression of a single object moving quickly across the skin. With the intermediate intervals between the two stimulations one object seemed to jump quickly from one point to the other. At the same time the two points appeared to be closer together than they really were.

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The threshold for the perception of movement across the skin is investigated by Basler (1). He finds that the shortest distance at which the movement is perceptible is .02 mm., the slowest rate 0.1 mm. per sec.

Mme. Lipska-Librach (3) reports a lengthy study of 420 school children of Brussels in regard to the relation between intelligence and various sorts of sensory acuity. In the cutaneous field she investigates the two-point threshold, and finds that the more intelligent children show a smaller average threshold than do the less intelligent, regardless of age (9 to 12 years). The difference is small, however, in comparison with the wide variations among individual children of each grade of intelligence, and therefore a determination of the two-point threshold cannot serve as a test of intelligence.

The only work on kinæsthetic space perception is that of Szymanski (9), who is interested in the sense of direction alleged to be shown by various primitive peoples, and lacking in European races. His work is suggestive for method rather than for results obtained. He tests the sense of direction of Polish school children (13 to 15 years of age) by the simple device of having them attempt to walk straight forward (with eyes and ears closed) for a distance of 15 m., and then turn and come back to the starting-point. The floor over which the subject walks is marked in squares, so that each step of his progress can be recorded. The method is thus relatively accurate in spite of its simplicity. As the author himself suggests the results obtained by him can be interpreted only in comparison with corresponding tests performed on people of other countries and races.

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SPACE ILLUSIONS

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Barenne (1) presents an historical account of the facts and theories of alloæsthesia, which is defined as the localization of a tactual sensation on the side of the body opposite to that on which the stimulus was applied. Experiments were performed on animals. The phenomenon occurred with a unilateral section of the sensory spinal tracts, coupled with a hyperexcitability of the posterior grey substance lying caudal to the hemisection, which excitability was induced by applications of strychnine.

In Stevens's illusion (11) two observers sleeping in a tent overlooking the water awoke at the same time with the feeling that the tent and cots were floating on the water. The illusion was visual as well as organic. The tent was placed on a platform fastened to trees and both the subjects had passed the preceding evening on the water. The organic after-effects of the boat's motion was stimulated by the swaying of the trees to which the platform was attached. The illusion occurred after waking and was not preceded by a similar dream.

The attempt (15) is made to correlate the suggestibility of defectives to the size-weight illusion with the mental age per the Binet scale. The percentage who failed because of a lack of comprehension of the task decreased with the mental age and became zero at 4 or 5 years. The percentage of failures with comprehension increased at first and then decreased to zero with age, while the percentage subject to the illusion increased with age, becoming 100 at 8 years.

Starting with the known illusion that of two equal circles placed within an angle, that nearest the apex appears the larger, Ponzo (9) finds that the overestimation persists when one circle is placed outside the angle and the two are compared successively. He now assumes that the moon at the horizon appears larger than at the zenith because it appears in the former case at the apex of the intersecting planes of the sky and the earth.

In writing there is a tendency on unruled paper to slant the lines, i. e., to deviate from the horizontal. The tendency is present in drawing a series of oblique parallel lines of equal length. Ponzo (10) finds that the direction of the deviation depends upon the kind of obliquity, while its extent varies with the degree of obliquity and the length of lines. It tends to disappear with practice. In drawing any line the subject determines its point of origin by an eye movement from the end of the previous line. The eye tends to move perpendicularly from the preceding line and consequently the succeeding line is started either too high or too low according to the direction of the obliquity.

In the Poggendorf figure, Hasserodt (6) finds that the illusion is much greater with children than with adults; it varies in size directly with the distance between, and the length of, the two parallels; it decreases as the length of the intersecting line is increased. In the process of adjusting one half of the intersecting line to secure apparent continuity, the illusion varies in size with the direction of the adjustment and its size varies according to whether or not this adjustment is perceived. As a basis of explanation he finds that an acute angular figure suggests a movement in the apical direction. The exact direction is a function of the relative lengths of the two sides, the longer side exerting a predominant influence. In the Poggendorf figure we have two such angles, the movement tendencies of which are antagonistic. The illusory displacement, however, is opposite to these movement tendencies. The "*Blick*" or attention attempts to follow the suggested movement, but suffers a "*Hemmung*" or reversal and this is the cause of the illusion. The fact that the illusion varies with the direction of the adjustment is regarded as a strong proof of the correctness of the theory.

Gemelli (4) summarizes the article cited in (5). He presents a careful piece of work on the illusion of filled *vs.* empty space in the tactual field. His apparatus and methods seem excellent. Among his subjects were those blind from birth. Using point limited and filled extents, he finds overestimation of unfilled space for both simultaneous and successive comparisons, though in the latter case the first stimulus tends to be magnified. The effect is greater for the shorter presentations. A maximum of effect is secured with a certain "filling in." A symmetrical filling gives the greater effect when the presentation is prolonged. The effect varies with the character of the stimulus points. Practice decreases the illusion and

eliminates it entirely with prolonged exposures. Substitution of short lines for points does not affect the results. An accessory stimulus (points or lines) tends to increase that one of the extents near which it is placed. The illusion can thus be increased or decreased. Using point limited empty extents with an accessory line stimulus for each, he found an overestimation of that one with the longer line, which overestimation varies directly with the relative inequality of the two lines. Comparing two linear (filled) extents of unequal thickness, there results an illusion in favor of the thicker one and the effect is proportionate to the length of the two lines. The experiments are regarded as incomplete and the conclusions as tentative. The causal factors are many and are both physiological and psychical.

Polimanti (**8**) describes two illusions: (1) On each of two horizontals are erected at right angles a series of equidistant parallels, the two series differing only in length. All segments of the horizontals are equal in length, but those between the longer parallels appear the shorter. (**2**) When two parallels are joined at any place by a solid black rectangle, both members of the parallels extending above and below the rectangle appear divergent. Both illusions are explained on the principle that filled space is overestimated. In the first illusion the eye is attracted toward the top of the parallels; when these are long, the distance is empty, while with short parallels the subject regards the linear segments per se. In the second case neither the illusion nor the application of the principle was evident to the reviewer.

Flügel, Zimmer, and Thierfelder are concerned with the illusion of reversible perspective. Thierfelder (**12**) notes three aspects of the phenomenon as exhibited in a rotating wheel and gives them the following order as to importance:—reversal of the two edges in relative depth, rotation of the plane in which the wheel is perceived, and the reversal of the direction of the rotary movement. The paper is concerned with the second aspect, and it was found that the degree of this plane rotation varies directly with the angle of elevation. The extent of the rotation can be determined from the formula, $180°-2a$, where "a" is the angle formed by the real plane of the wheel and the line of vision directed to the more distant edge. Roughly this means that the plane of the wheel in either of its two positions (real and apparent) is always viewed at the same angle. Zimmer (**14**) presents a historical statement and critique of the various theories. He secured a simultaneous registration of re-

versals, eye movements, and accommodatory changes, and finds that these adjustments are present with most reversals but are subsequent to the illusion while their extent is less than that demanded by motor theories. Reversals occur independently in two simultaneously perceived figures; they also occur in after-images. These facts are incompatible with the motor hypothesis, and the movements are regarded as compensatory and not causal. From the introspections in the after-image tests, he advances three causal factors, direction of attention, the apperceptive idea, and an unknown non-volitional process, the relative importance of which varies with individuals. Flügel (2) also found independent reversibility of two simultaneously perceived figures, and the fact eliminates such explanations as that of Wundt or an attentive hypothesis in so far as the fluctuations of attention are due to the Traube-Hering waves. Various drawings complicated with a graded series of details were observed with a number of attentive attitudes. Direction of attention, defined as clearness, is the main cause of the reversals. Those parts of the figure receiving the maximum of attentive stress are perceived as forward, but the direction of attention is largely independent of fixation and eye movement. The ability to control the reversals is slight though the power varies with individuals. Since attention is the cause of the reversals, the above fact means that the direction of attention is largely involuntary. In the second paper (3) the hypothesis that these reversals are due to local fatigue is tested. After fatiguing for one set of conditions in which one perspective is predominant, he turns to conditions in which normally neither perspective is predominant. Local fatigue induced in the first condition should manifest itself in a predominance of the opposite perspective in the second test. Such effects were present for less than half of the observers and in many of these it occurred for but one perspective. Fluctuations of attention are thus largely independent of local fatigue.

Holt (7) and Woodbridge (13) discuss the philosophical implications of illusions. Holt's article contains an excellent discussion of a psychological topic which belongs to the domain of sensation rather than illusion. He criticizes extensively the specific energy theory, maintains that nerve impulses are vibratory, as it were, in character, and concludes that difference in frequency of nerve impulse underlies difference in sensational quality. In support of the latter view he utilizes two main facts:—the significance of binaural phase difference in the localization of sound, and the

rhythmical character of muscular contractions in response to an intermittent electrical stimulus applied to a nerve trunk.

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PSYCHOLOGY OF TESTIMONY AND REPORT

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The references to Hegge and Franken are repeated from last year's list because of my inability to review them at that time. Hegge (10) deals with the problem of scoring the picture test, with special reference to the computation of P (the number of possible items). For the well-known *Bauernstube* picture Stern selected

76 items, but some observers report 164 items, and Hegge obtained 289 different items from eight observers. Hegge recommends computing *P* by this empirical method. He also calls attention to the fact that the several coefficients of report, range, fidelity, etc., calculated for any given test do not have a constant value for the observers, but merely a relative value for the given test, as, for instance, in comparison of sex, age, race, etc. Other analyses are made by Hegge, who shows, for example, that good reporters give more items and hence suffer greater liability of error, but may actually make fewer errors because they are more cautious and critical.

Franken's article (8) is an elaborate extension of his work by the *Methode der Entscheidungs- und Bestimmungsfragen*, already explained (this BULLETIN, 1912). A distinction is made between right and wrong and between true and false answers. Answers to the *Bestimmungsfragen* ("What is the capital of France?") may be right or wrong: answers to the *Entscheidungsfragen* ("Do you know what city is the capital of France?") may be true or false. The following are some of the main conclusions: 1. Those who give many right answers usually also give many wrong, but few false answers. 2. Those who give many false answers usually also give many wrong answers. 3. Range of memory and class standing usually show good agreement. 4. The formal characteristics of memory (range, readiness and fidelity) are as a rule positively correlated. 5. Those persons whose information is of average amount usually exhibit the least truthfulness, whereas those with a small amount of information owe their greater truthfulness to their lack of ambition, while the gifted resist opportunities to false report through their great cautiousness. 6. The well-informed are, as a rule, more ambitious, but also more truthful than the poorly informed. Other conclusions refer to the effect of allowing shorter or longer periods for reflection before the answer is demanded.

Dallenbach (5) used the picture test, supplemented by a test of memory for geometrical forms of different sizes, shapes and colors, with 20 college men for the purpose of investigating the effect of various time-intervals (zero, 5, 15 and 45 days or zero, 1, 3 and 6 days) between exposure and report. In general, errors increase with time-interval, rapidly at first, then more gradually: thus, for one picture, the per cent. of error in the narrative was 10.5, 14.3, 18.0, and 22.4 for intervals of 0, 5, 15 and 45 days, respectively. Dallenbach also found fidelity and certainty positively correlated,

regardless of time-interval. In his test with forms, errors were greatest with colors, next with position, next size and lastly shape. Errors were greatest in the green and least in the yellow tones.

An elaborate qualitative analysis of report has been contributed by Schultz (**17**). The analysis is based upon reports gathered from university students and also from teachers in description of a prearranged episode in the classroom of Professor Aall. The following are some of the forces at work in determining the nature of report. (1) What things are noted depend partly on the observer's mental state at the time, partly on the objective complex in which the things occur. (2) Attention is caught by novelty and by the logical significance of the impression. (3) The actual items noted and reported are more extensive than what the observer is aiming to perceive: there is a "spread" of observation outside the main objects of attention. (4) Optimal conditions for report are given when novelty supplies a motive, but familiarity of details affords ease of comprehension. (5) When a strange event irrupts suddenly into a familar and commonplace setting, a certain amount of time is necessary before attention can be readjusted to the new situation. For this period of readjustment reports are bad. (6) Reports show the presence of perseverative tendencies, enough to make it probable that "perseveration plays an important rôle in the errors of witnesses." Since this tendency decreases with time, it follows that reports given directly after an event need not be the best. (7) Reports are affected by a process of logical elaboration, emphasis of the essential, dropping of the unessential (principle of economy of consciousness). (8) Descriptions of persons tend to fall into more or less preconceived types. (9) Some persons embellish their reports to secure better literary form and may thus distort them unintentionally. (10) Emotion produces decided distortion, especially of verbal items (quotations). (11) Better reports are secured when the reporter believes himself seriously responsible for his statements.

The lecture given by Pick (**16**) at Vienna is another discussion of the qualitative aspects of report, but is confined to pathological aspects, such as retrograde amnesia, the erroneous filling of gaps in memory, resistance to attempts to fill in such gaps, false feeling of familiarity or lack of familiarity (cryptamnesia). Pick points out that these phenomena are characteristic of hysteria and other pathological conditions, but that they may also be developed in normal persons under the stress of strong emotion.

Two books testify to the progress made in jurisprudence in assimilating psychological facts and principles. That by Arnold (1), however, can scarcely be said to reflect or embody any of the recent experimental work, as its author apologizes for the inability to read German and makes up in this second edition for his lack of acquaintance with Stern's work by quoting freely from Münsterberg's *Psychology and Crime*. On the other hand, Wigmore's large volume (26) is a work of the first water: he has drawn freely from modern discussions and presents a constructive program for the better training of students of law and others interested in disentangling masses of mixed evidence.[1]

The remaining references can be passed over more briefly. Gross (9), v. Mach (12), v. Beneckendorff and v. Hindenburg (3), Mothes (13) and Türkel (23, 24), all are confined to citations of cases or experiences that have come up in their daily work illustrative of this or that feature of the psychology of testimony. Boden (4), Stöhr (19) and Sturm (21, 22) have given excellent summaries of those portions of the psychologist's work on testimony of special concern for jurists. These contributions are refreshing examples of the genuine interest taken by some jurists in the scientific examination of testimony, and have the additional merit of setting a number of constructive problems for the psychologist.

Basch (2) gives some account of the errors that appear in testimony relative to nuncupative wills. Näcke (15) points out that the unreliability of the statements of persons who have taken alcohol depends to a great extent upon individual susceptibility as well as upon the absolute amounts consumed. Storch (20) tried the picture test as a means of diagnozing manic and depressive states of insanity and concludes that the method furnishes a useful supplement to the other devices of the alienist. Both types are below normal in spontaneity and range of knowledge: manics are incautious and unreliable, but depressives are cautious and reliable. V. Kármán (11) protests against the low rating given by many psychologists to the testimony of children, and agrees with Gross that under some circumstances they are quite valuable witnesses. Winch (27) reports briefly upon experiments with English school children by the aid of the regulation picture test. Fiore (6, 7) has taken up the psychology of testimony in Italy: his general review summarizes the contributions made in that country since

[1] The present writer has reviewed this important work more extendedly for a forthcoming issue of the *Journal of Criminal Law and Criminology*.

1906. Münsterberg (**14**) had students estimate which of two cards had the greater number of spots on it, and then revise their estimates after a discussion of their opinions. He claims that such a test presents a good counterpart of the situation facing a jury and that the fact that his men students voted more nearly right after the discussions substantiates the general faith in the value of jury-trials. Unfortunately for the other sex, his experiments showed that women were unconvinced by such discussions, whence he argues that there exists a sex difference that "makes men fit and women unfit for the task that society requires from jurymen." Weber's lecture before a pedagogical society at Chemnitz (**25**) shows the relation between pathological and normal lying, with special reference to the transition between the two. He believes that truthfulness has to be developed in every child, that parents must avoid getting children into situations that incite to lying and by continued training gradually develop a respect for truth.

For a more extended and critical survey of the work in the field of testimony during the years 1911–1913 the reader should consult the valuable general review of Stern (**18**).

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SUGGESTION

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Bunnemann's two articles (**2**, **3**) are an attempt to explain the extreme working of suggestion in such phenomena as hysterical anesthesia and "psychical" pains. His explanation is assumed to be adequate to account for all normal activity as well as for all abnormal. He asserts that all human action (including all physiological activity in men and animals—possibly also in plants) is analyzable into three factors, *i. e.*, stimulus, interpretation, and reaction. The middle term is spoken of as subjective and as logical but is thought of as particularly dynamic. It is asserted to be the most important and yet the one factor most neglected in modern psychological conceptions. He is desirous of swinging the pendulum away as far as possible from the behaviorist's point of view. Suggestion is regarded as an unusual working of "interpretation" due to expectancy or to some emotional disturbance. Although nor-

mally interpretation leads to a reaction having a direct relationship to the stimulus, in extreme cases the interpretation may be practically independent of the stimulus and may produce reactions which normally are produced only by bodily injuries, etc. In hypnosis the operator produces his results by means of his control of this factor of interpretation. If a postage stamp stuck on the back of the subject is actually interpreted as a substance that will produce a blister, the only possible result would be the creation of the blister. Suggestion is primarily an affective phenomenon which influences the central factor of interpretation.

Cornelius (**4, 5**) agrees with Bunnemann in regarding suggestion as fundamentally an affective phenomenon, but otherwise these two authors are in irreconcilable disagreement. By autosuggestion Cornelius has in mind such phenomena as insomnia, anxiety, fears and pains which seem to have no adequate physical basis: hence are assumed to be due to the abnormal workings of the mind. Cornelius asserts that these mental phenomena are merely secondary and result from a deranged condition of the body. He declares that the only satisfactory method of treating these autosuggestions is to restore the body to its normal condition. The cause of emotions is bodily changes. Fear, anxiety, etc., are produced by particular bodily changes. The reverse is not the case. Accordingly he does not sympathize with such modern psychotherapeutists as Dr. Dubois who attempt to remove autosuggestions by appeals to the intellect. Dr. Bunnemann (**2, 3**) asserts that the mental factor may produce any or all bodily changes. Dr. Cornelius on the contrary seems to regard the action of the mind as incapable of producing the bodily changes that result in emotions and such phenomena as dread, insomnia and "psychical" pains.

Brugeilles (**1**) attempts to reconcile the three theories concerning the nature of social influence, i. e., Tarde's theory of imitation, Durkheim's of compulsion, and Worm's of cooperation. He asserts that each theory is but a partial truth and that the final reconciliation is to be found in the fact that each of the three is but an aspect of the explanatory factor which is suggestion. Thereupon he defines suggestion in such a broad way that it includes all of imitation, cooperation and compulsion. "Disons d'abord que par suggestion nous entendons toute pensée, tout fait pouvant produire sur un cerveau une impression plus ou moins forte, et tendant à passer à l'acte." This definition is however so broad that it includes all mental processes and hence ceases to have any explanatory value.

As a student of the feeble-minded Johnson (6) calls attention to the necessity of avoiding suggestion (betraying the answer?) in giving mental tests to the feeble-minded. He also cites an interesting and instructive instance of the extreme working of suggestion in the case of a feeble-minded girl. The reviewer, who has found normal individuals highly suggestible, is inclined to believe that Johnson might have substituted "also" for "especially" in the following sentence. "The influence of suggestion is especially strong with the mentally defective."

Langfield (7) in experiments with a tracing board similar to Whipple's found that the accuracy of movement was modified by the form in which the directions were put. The positive instruction: "Go down the middle of the grove," resulted in more accurate movements than the negative instruction: "Do not touch the sides."

Miss Washburn (9) defends and explains more fully experiments previously reported (8) and reviewed in this BULLETIN in July, 1913. The slight degree to which suggestion influenced the judgments of the students is fully explained by the announcement that the suggestions were not given by Professor Washburn herself but "by Miss I. Powelson, a fellow student of the observers, who did not in their eyes have any special prestige as a judge of the affective values of color."

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TESTS

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This report will deal only with questions regarding the technique and validity of test methods as distinguished from the results which are obtained.

A valuable discussion of the problems which are to be met in testing intelligence is presented by Stern (**17**). He distinguishes between single tests, none of which by itself is reliable, and test series and test groups. Test series, such as the Binet scale, are of use chiefly to distinguish larger differences in intelligence, such as the differences between children of successive ages, while test groups which have been found to distinguish fine differences may be used to differentiate children of the same age. The suitability of tests for membership in such groups is determined by applying the method of correlation. Tests are better selected on the basis of correlation with an independent rating, such as may be made by a competent teacher, than on the basis of correlation between the tests themselves. The latter method results in a one-sided selection, whereas different tests in the group should compensate for one another by measuring different abilities. Wells (**22**) calls attention to the need of correlating tests with independent ratings and urges testing not only intelligence but also the subject's manner of working and emotional reaction.

The application of tests to determine the mental function in which backward children are weak and to furnish the basis for their formal training is described by Morgan (**13**). Fernald (**7**) on the other hand emphasizes other data than those which are obtained in a formal psychological examination as a means of judging mental deficiency.

The greatest amount of attention continues to be given to the Binet scale. While some writers continue to be content with the scale as it is, and others indulge in destructive criticism, the majority of the writers accept the scale in principle but are concerned with its improvement in content or with the development of the technique of using it. Stern (**17**) in his extended discussion discusses the technique most fully. His most important contribution consists in the proposal to express an individual's status in terms of a "mental quotient" rather than in terms of the number of years

which he is retarded or advanced. The mental quotient is the ratio of the mental age to the chronological age. This takes account of the fact that differences between the mental advancement of children of successive ages becomes progressively less from birth to maturity. Kuhlmann (12) gives a table, based on this principle, which shows the mental status of individuals at each chronological age who will finally attain different degrees of intellectual ability. Both Stern and Kuhlmann justify their formulæ by applying them to the results obtained from the application of the Binet scale.

Stern (17) and Terman (19) discuss the percentage of children who should pass a test or group of tests at age in order that the test or tests may be regarded as satisfactory. Terman holds that the 75 per cent. standard set up by Bobertag is arbitrary since the number testing at age depends on the fineness of the yearly unit. Since the unit is finer in the upper ages fewer should there test at age than in the lower years. He suggests reducing the units in the earlier years by using fractions of years and then using a 50 per cent. standard. A similar correction could be made by the use of the mental quotient. Stern does not discuss this point but accepts the 75 per cent. standard as a rough measure.

Stern finds in the discrepancy between the results of the Binet tests and school standing neither a criticism of the school grading nor of the scale but merely an indication of the fact that the school grade is based in part on other factors than intelligence. In making recommendations for an extension of the scale he suggests that the tests which Chotzen and Kuhlmann found to be least affected by age differences as distinguished from differences in intelligence be chosen. He agrees with Terman in computing mental ages in terms of fractional units, and further recommends that in computing mental age by crediting tests above the age used as the basis for calculation extra weight should be given to the tests belonging to the higher ages. In making up the tests for a given age he suggests pertinently that they should comprehend a variety of sorts of abilities.

Other suggestions for the extension and use of the Binet scale are made by Terman and others (19, 20), by Goddard (8, 9) and by Strong (15). Wallin (21) emphasizes again the need of competent examiners, in contrast to Goddard's belief and practice (8) and cautions against the hasty substitution of new tests for the 1908 series. Berry (3), on the other hand, finds that the 1911 series gives better results than the 1908 series and attributes the superior-

ity to the omission of certain tests and to the changed method of scoring.

Three articles deal with tests of proficiency in the school subjects. Courtis (4) replies to a previous article in the Elementary School Teacher by Otis and Davidson in which they showed that a first test with the addition test gave pupils widely different relative rank from that attained in the twenty-fifth consecutive test with the same material. They conclude that the first test does not give an accurate measure of the child's ability. Courtis confines his reply almost entirely to the production of evidence in support of the position that a single test "accurately reflects the degree of that quality (the quality being measured) at the time the measurement is being made." He is dealing with chance variations while the criticism deals with an entirely different matter, viz., the different positions in the practice curve which a single test finds different persons. In his other article (5) Courtis discusses the methodology of his tests.

Starch (16) puts forward a new method of grading the legibility of writing by measuring the time required to read isolated letters. He measures the specimens of the Ayers and the Thorndike scales by way of testing his method and finds correlations of .97 and .74 respectively. Examination, however, shows that while there is a correspondence in the order of rating indicated by the coefficients the amount of difference found is much greater in the lower than in the upper part of the scale. Thus between the first and the fifth steps of the Ayers scale the average difference found was .02 second, and between the fifth and ninth grades .004 second. The average difference between the lower five ranks of the Thorndike scale was .115 second, and between the upper ten ranks .0055 second. Starch also compared the variability of judgments made with the Ayers and Thorndike scales and without any scale and found the variability with a scale to be about 60 per cent. of the variability without a scale.

Sylvester (18) has standardized the form-board test and an anonymous writer (1), presumably Goddard, finds the A test not to be suitable for diagnosing feeble-mindedness. Gray (10) describes a new substitution test and Rowland (14) has roughly standardized some common tests for the diagnosis of mental defect.

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ÆSTHETICS

BY ETHEL PUFFER HOWES

With a dearth of systematic works in æsthetics, the output of 1913 presents valuable special undertakings, notably in the visual and auditory fields.

First among articles on general theory, is to be marked Volkelt's (20) criticism of the various ascriptions of validity to the æsthetic intuition. He himself finds its ground in the æsthetic demand for harmony or reconciliation. It belongs to the meaning of human life and endeavor that means and powers shall exist to resolve discords into harmony. "The intuitive certainty of the harmonious import of human life" is the æsthetic ground-intuition.

An animated exhortation by Major (8), to progress beyond the "passive" categories of pleasure-displeasure, enjoyment, etc., for the æsthetic experience, finds a certain sympathetic echo in Wirtz (21). The definition of the æsthetic as the "end-in-itself" cannot stand against the facts. The very *Einfühlung*-theory shows the need of envisaging the spectator as in some way productive. Moreover any fruitful æsthetics must work with the spirit of the times, which runs to the most intense emphasis on all energies. This needed productive principle Major finds in the love-concept—the erotic concept, in fact. "*Alle Lust will Ewigkeit*" (Nietzsche),—which is to say that the work of art is the fulfillment of our desire of beauty, achieved through its perpetuation. Wirtz, on the other hand, through a series of very suggestive reports by gifted observers, believes himself able to demonstrate the "*Schaffensdrang*" as the strongest element in the æsthetic reaction. A surprising correspondence exists between the psychic factors in the experience of the creative artist, and the art-enjoyer. These two papers are less interesting, perhaps, from their intrinsic excellence, than as indications of a tendency to press forward into new fields.

In explicit extension and amendment of Volkelt's views on the modifications of the æsthetic (the Tragic, Comic, Beautiful, Sublime, Ugly, etc.), Laurila (4) holds that the doctrine of these modifications, although the favorite field for speculative æsthetics, is emphatically not a central question, such as is that of the nature of the æsthetic experience. The æsthetic modifications should be considered as æsthetic types. The Beautiful is not the inclusive concept of all that is æsthetic, but that which immediately pleases in its sense-form; while the æsthetic is all that can be æsthetically contemplated, even the Ugly. Volkelt's definition of the Tragic as the downfall of human greatness is both too wide and too narrow. The doom of any one, great or not, who in our eyes has especial need, claim, expectation—presumption—of a fulfilled life, is tragic. The view of so many æstheticians that the Tragic is pleasurable, is due to their starting from the false ground that the æsthetic must

be pleasurable—the Tragic is æsthetic, therefore they think it must be pleasurable.

An interesting treatise on the Comic by Levi (5) devotes a full half to a critical treatment of previous theories, with emphasis on Kraepelin, Sully, Lipps and Freud as exponents of a naturalistic view; Bergson, Schütze (1817) who is quoted with approval, Plato, Hobbes and Shaftesbury. The constructive theory is based on the distinction between "taking-seriously" and the opposite—a distinction within the field of ethical reality. To acknowledge the moral reality of anyone is to enter into responsible relations with him; this involves effort, and to be freed from such effort is agreeable. Hence the pleasure of the comic, the "not-taken-seriously." This is given when appearance and reality are manifestly in contradiction, when responsible existence is not ascribed (automatic actions), or when we cannot or will not go behind appearance—in other words, when free and responsible action is not imputed to the person observed. In these cases our spiritual activity "lets itself go," hence the vivacity of perception in the comic experience, etc. The author considers that this theory contains the valuable elements of preceding ones, in particular those of Bergson and Schütze.

Somewhat analogous to the foregoing in its argument for literature is the suggestive theory of MacDougall (7) that the artist who has to express human emotion in literary forms is dealing with refractory material, which originally took shape only for logical, conceptual purposes. He therefore has to seek his end, the suggestion of a will-attitude, in loosening the will's habitual transitive connections. This he achieves by the use of language that startles and arrests, in which the musical values take attention, and the logical procedure is inhibited. In this state the emotional qualities come to their own, without interference of logical purposes.

Volkelt (19) criticizes current theories of style as too thin in treatment, taking too little account of content. If style is defined as typical form-determination, and we may neglect the style-differences due to the development of arts in different periods, races, cultures or individuals, we may still distinguish five pairs of antagonistic possibilities for every art-problem:—Elementary vs. reasoned, naïve vs. sentimental, objective vs. subjective, actual vs. heightened, individualizing vs. typifying. The rest of the paper is given to the explication of these pairs.

The formative factors for the great poetic types are, according

to Müller-Freienfels (11) the outer conditions; *i. e.*, the constitution of their public, the necessary manner of presentation, and the kind of object dealt with. The drama is moulded to the physical and mental limits of listening (necessity of pauses, hence inner logical divisions, continuity, unified action); to the simultaneous activity of eye and ear (words fitting and issuing in action, use of symbols); psychology of the crowd (suggested emotion, relative lack of logic, conflict as the strongest emotional lever). Parallel analyses are carried out for epic and *Roman*.

A book [Eastman (2)], the professed aim of which is "to increase enjoyment," need not be criticized here were it not that it also proposes to contribute "to scientific truth." From this point of view it should be said that the work is in no way a contribution to æsthetics; what is sound in it is not new, and crucial unsolved problems are whiffed lightly away with cock-sure precociousness.

The only experimental work I have found in this field is that of Sterzinger (15), which is based on the quantitative judgments and accompanying self-observation, by several objects, of a series of poetic figures (in German). He concludes that the most important elements in the æsthetic enjoyment are, in order, fusion of elements of the presentation, pseudo-sensation, and feelings (notably of power and of rest). Very little *Einfühlung* was detected.

Tenner (16) offers some lucid criticisms of the form of the question of verse-melody, as first propounded by Sievers. In speech-music, tone-color takes the rôle filled by pitch in real music; verse-melody has no scale, no tonic, no time. Tenner's contention is that the essential element in tone-color is the emotional shading, and that verse-melody is therefore dependent on the right emotional interpretation. This conclusion seems to the reviewer erroneous if verse-melody is to be understood as the æsthetically satisfactory sound-element in verse.

The title of Lach's work (3) gives an inadequate idea of its monumental character, or of the tremendous field covered. The central thought is that in the "ornament" of music we have the vestiges of the most primitive musical utterance, and that a study of the development of ornament will therefore reveal at every level, in every period, the way of transition from the primitive, through the "*primär-æsthetisch*" to the fully formed beautiful melody. This development is traced in the three main divisions of the book; first analytically, as an hypothesis; then historically and genetically over the whole earth; finally systematically, on a critical and

psychological basis. An appendix contains examples to the number of thousands. The book requires more extended notice than is here possible.

Valentine's experiments (17) on the appreciation of musical intervals yield results which can be noted only in part. The apparent pitch of an interval is for most people determined approximately by the pitch of its higher note. The major third is preferred by adults; then a group of four,—minor third, octave, major and minor sixth—are found "pleasing"; a third group, the fourth tritone and fifth, "slightly pleasing";—this order being by no means that of the degree of consonance. Among children of the Elementary Schools, no appreciable preference for concords over discords appears before the age of nine, but at twelve or thirteen the order of preference is remarkably like that given by adults.

Siebeck (14) finds the true aim and achievement of music in replacing the oppressive feelings of real life by an harmonious sequence of moods and sentiments (*not* emotions), so æsthetically ordered as to give the impression of a personal revelation.

In the visual field, Bühler's (1) important intensive study, the first of several projected works, though complete in itself, is a psychological analysis laying foundations for æsthetic principles; its final aim is a "Logic of (sense) Form presentations." Model experiments demonstrate the primary visual form to be a straight line, its straightness psychically primary to its direction. The amazing lowness of the straightness-threshold leads to the hypothesis that the straightness-impression arises in the stimulation of certain rows of retinal elements which have a peculiarly close connection. Thereafter are traced the forming of the curve-impression and the magnitude-impression. The centre of gravity of the book is however in its treatment of the perception of proportion. The difference-threshold here is found to be below that of sense-discrimination of lengths. The proportion-impression depends on a "*Proportions-Einstellung*" or setting, for which the physiological hypothesis proposed is a cerebral setting of a "modulating" character, such that the comparison of magnitudes rests on the production of a secondary effect, dependent on the state of stimulation of two separated receptors. This "*Einstellungs*"-theory conceives Weber's Law as a special case of the general law of proportion. The significance for æsthetics of this fundamental character assumed for the law of proportion is obvious.

Sander's experiments (13) aimed to present æsthetically inter-

esting forms of sufficient complication so that the elements could be continuously varied. The particular objects were rectangles of constant base but variable height, topped by a triangle of variable height. In the experience of the two preferred combinations ("optima," O_1, O_2), no tension feelings or will-impulses were observed. "The form does not strive upwards . . . but embodies a modest, restful and self-contained existence." On the other hand, vivid tension-feelings accompanied combinations in which a dominating influence of certain lines obtained, instead of the balance of the optima. It appeared that O_1 and O_2 correspond with the proportions of the Greek temple, and the larger with those of Romanesque and Gothic windows.

Müller's (**10**) observations show children as standing at the lowest æsthetic grade, with no discernible relation between school ability and æsthetic judgment, or between the latter and æsthetic sensibility. Valentine (**18**) finds good evidence that at the age of three months an infant may experience the sensations of red, yellow, brown, green and blue, with an order of preference as follows: (1) yellow, (2) white and pink, (3) red, (4) brown and black, (5) blue and green, (6) violet. As the order of preference cannot be explained entirely by reference to brightness or to novelty, it is suggested by Valentine that it is partly determined by the relative powers of the various colors as stimuli to the organism.

In continuation of Everth's writings on the æsthetic values of the frame, Marcus (**9**) asserts the reciprocal relation of frame and picture, and notes the properties of the perspective, which itself brings the frame-principle within the picture. Luquet (**6**) formulates a destructive criticism of the "magic" theory of palæolithic art. The essential question as to primitive—chronologically primitive, that is—art is whether it is disinterested or wholly practical. From the facts we possess the question is still open.

The brochure of Myers (**12**) has not yet been received but will be dealt with in the next review.

The year 1913 was signalized by the first International Congress for Æsthetics, which was held in Berlin, October 6–9. Its inception and successful issue was due primarily to the activity of Professor Max Dessoir, who in 1906 founded the *Zeitschrift für Æsthetik u. Allgemeine Kunstwissenschaft*. The four sections of the Congress were devoted respectively to general æsthetics or the philosophy of art, the plastic, literary and dramatic, and musical arts. The proceedings are to be published.

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SPECIAL REVIEWS

Psychology in Daily Life. Carl Emil Seashore. New York: Appleton, 1913. Pp. xviii + 226.

This book is one of the *Conduct of the Mind Series* edited by Joseph Jastrow and contains a preface by Professor Jastrow explaining the purpose of the series, which is "to provide readily intelligible surveys of selected aspects of the study of mind and its applications."

The author considers play the basis of our life and therefore devotes the first chapter to that topic. In play we have the overcoming of difficulties and thus it is the principal instrument of growth. Even in adult life play has an important rôle, not only in fostering the spirit of fellowship, but in taking a man out of the drudgery and narrowness of work and affording him a wider scope for the exercise of his natural instincts. Play encourages the development of personality and self-realization, which makes it closely akin to religion.

In the chapter on "Servicable Memory" rules and corollaries are given to cultivate greater efficiency with the least possible fatigue, such as the systematic training of the senses and the proper control of the attention. There should be a strong determination and a wise selection of useful material as well as the proper mode of expression. Vacation and rest periods are also discussed and the afternoon nap advised.

In the chapter on "Mental Health" we read that bodily health depends upon mental health as well as the latter upon the former. Ten rules of wise living are proposed such as self-control, generosity, etc.

The next chapter is devoted to an elucidation of the meaning and significance of "Mental Law." Every thing leaves an impression upon our system and always in some way affects our life. These impressions reoccur according to the laws of association, which the author thinks it advisable to arrange under the headings of similarity, contiguity and contrast. Finally the fact that all action leads to automatism suggests care in the formation of habits.

The chapter on "Illusions" is an extensive illustration of the subject of the previous chapter, *i. e.* the working of the laws of mind.

The book closes with the topic of "Mental Measurement" and its significance for vocational guidance. The familiar work of the author on the measure of a singer is included as an illustration.

The aim of the book has not been toward a systematic treatment. The author has selected those topics which he deemed of greatest interest and importance for practical life and he has presented them in a clear style free from all technical language. The laboratory psychologist will recognize the origin of many of the principles set forth, he will also feel that much has sprung from the personality of the author. In other words Professor Seashore has relied to a great extent upon his excellent common sense. Throughout the book there is a strong ethical note.

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REPORT OF MEETING—THE SIXTH CONGRESS FOR EXPERIMENTAL PSYCHOLOGY

The sixth Congress for Experimental Psychology was held in Göttingen, April 15 to 18, 1914. It was well attended by psychologists of a number of different nationalities, representing most of the important psychological laboratories of Europe. The greater number of those present were, of course, German, though Austria-Hungary, Italy, England, Russia, Holland, Belgium, Norway, Sweden, and the United States were also represented in the attendance.

The congress was held in the auditorium building of the university which furnished convenient quarters, the meetings taking place in the auditorium itself. The work of the local committee in arranging for the convenience and entertainment of those who attended is deserving of praise. Aside from the following of a prearranged program and limiting the time of discussions, the congress was made as informal as possible. The program consisted of twenty-nine addresses and four general reviews of special topics. The first part of the report of the congress, consisting in brief abstracts of the papers that were read, had already been printed and was distributed among those present.

The congress was opened by a short address of welcome by the president, Professor G. E. Müller. The various subjects treated by the different speakers who followed are rather widely scattered and fairly evenly divided among the fields of psychological investigation. By far the greater number were reports of research,

some of these involving a demonstration of apparatus and method. If any subject stood out above the others by reason of the thoroughness with which it was treated, it was tone-psychology which occupied a prominent place on the program. A general review of recent experimental work in this realm was given by Professor Stumpf, and four of the addresses were in this field. An interesting paper on the experimental determination of individual characteristics was read by Professor Heymans of Groningen, Holland. Laying stress upon the necessity of having as great a number of subjects as possible in an investigation of this sort, he invited the coöperation of other psychologists. He suggested as a beginning the investigation of the ability voluntarily to concentrate the attention, and offered to send to anyone who cared to take part in the work a questionary and some simple apparatus for experimental investigation. Among the apparatus demonstrated in the course of the addresses were several variations of the tachistoscope and a method of demonstrating the independent existence of heat sensations. No effort was made on the part of the local committee to have a general exhibition of apparatus, but two individual exhibitions were set out in the auditorium building by the Göttingen firms of Ruhstrat and Spindler & Hoyer. During the days of the congress the laboratory of the Göttingen institute was open to the inspection of the guests.

The social feature of the congress included a general reception on the evening before the opening session, a banquet followed by a dance on the third evening, and an "*Ausflug*" on foot through some of the beautiful environs of Göttingen on the afternoon of the last day.

The full report of the congress is now being prepared for the press and will probably appear some time in the course of the summer. The next congress for experimental psychology is to be held in Turin, Italy, April 25–29, 1916. The addresses are to be given in German and may be announced through Professor Kiesow.

JOHN T. METCALF

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BOOKS RECEIVED

BEST, H. *The Deaf. Their Position in Society.* New York: Crowell, 1914. Pp. xviii + 340.

BLONDEL, C. *La psycho-physiologie de Gall: ses idées directrices.* Paris: Alcan, 1914. Pp. 167. 2 fr. 50.

GAROFALO, R. *Criminology.* (Trans. by R. W. Millar. Introd. by E. R. Stevens.) Boston: Little, Brown & Co., 1914. Pp. xl + 478. $4.50.

FERRERO, G. *Ancient Rome and Modern America. A Comparative Study of Morals and Manners.* New York: Putnams, 1914. Pp. vi + 352. $2.50.

WOOD, A. *The Physical Basis of Music.* (The Cambridge Manuals of Science and Literature.) New York: Putnams, 1913. Pp. 163. $0.40.

MOSBY, T. S. *Causes and Cures of Crime.* St. Louis: C. V. Mosby Co., 1913. Pp. x + 354.

LOWRY, E. B. *Teaching Sex Hygiene in the Public Schools.* Chicago: Forbes & Co., 1914. Pp. 94. $0.50.

LOWRY, E. B. *False Modesty that Protects Vice by Ignorance.* Chicago: Forbes & Co., 1913. Pp. 110. $0.50.

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THILLY, F. *A History of Philosophy.* New York: Holt, 1914. Pp. xv + 612.

LIMENTANI, L. *La morale della simpatia.* Genova: Formíggini, 1914. Pp. xvi + 260. L. 4.

TURRO, R. *Les origines de la connaissance.* Paris: Alcan, 1914. Pp. 274. 5 fr.

VERWORN, M. *Die Mechanik des Geisteslebens.* (3 Aufl.) Leipzig: Teubner, 1914. Pp. 92.

HOBSON, J. A. *Work and Wealth: A Human Valuation.* New York: Macmillan, 1914. Pp. xvi + 367.

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WEININGER, O. *Sex and Character.* (Trans. from 6th Germ. ed.) New York: Putnams, 1914. Pp. xxii + 356. $3.

COIT, S. *The Soul of America. A Constructive Essay in the Sociology of Religion.* New York: Macmillan, 1914. Pp. x + 405. $2.

VARISCO, B. *The Great Problems.* (Trans. by R. C. Lodge.) New York: Macmillan, 1914. Pp. xi + 370. $2.75.

v. UNRUH, C. M. *Leben mit Tieren. Tierpsychologische Plaudieren und Erinnerungen.* Stuttgart: Franckh, 1913. Pp. 167. M. 2.

WALLIN, J. E. W. *The Mental Health of the School Child.* New Haven, Conn.: Yale Univ. Press, 1914. Pp. xiii + 463. $2.

NAYRAC, J. P. *Physiologie et psychologie de l'attention. Évolution, dissolution, rééducation, éducation.* (Pref. by Th. Ribot.) 2 ed. Paris: Alcan, 1914. Pp. xii + 238. 3 fr. 75.

WALLAS, G. *The Great Society. A Psychological Analysis.* New York: Macmillan, 1914. Pp. xii + 383. $2.

DRAGHICESCO, D. *L'idéal créateur: essai psycho-sociologique sur l'évolution sociale.* Paris: Alcan, 1914. Pp. xv + 440. 7 fr. 50.

NOTES AND NEWS

A CONGRESS of the International Society for Sexual Research is planned to be held in Berlin in October, under the presidency of Dr. Julius Wolf. One section will probably be devoted to papers dealing with the philosophical, psychological, and pedagogical aspects of sexual matters. Details of arrangements may be obtained from the secretary, Dr. M. Marcuse, 85 Lützowstr., Berlin, W. 35.

JOHN T. METCALF, PH.D. (Yale), has been appointed instructor in psychology at Princeton University.

THE Fourth International Congress on Home Education will be held in Philadelphia, September 22–29. Announcements of papers should be sent to the president, Dr. Martin G. Brumbaugh, Superintendent of Schools, Philadelphia, Pa. Membership cards ($2) are to be obtained from Mr. George H. Frazier, care of Brown Bros. and Co., Philadelphia.

A NEW bi-monthly journal devoted especially to criminology and allied topics, and entitled *Revista de criminología, psiquiatría y medicina-legal*, is being published as an organ of the Institute of Criminology of the National Penetentiary, Buenos Aires, under the editorship of Dr. H. Fernández.

PROFESSOR JUNE E. DOWNEY, of the University of Wyoming, has been granted a sabbatical year's leave of absence, which she will spend mostly in Germany. Dr. Carl L. Rahn will have charge of the department of psychology during Professor Downey's absence.

THE following items are taken from the press:

AT Boulogne-sur-Seine, in the park of the Institute which bears his name, there was recently unveiled a statue of Marey, the physiologist who was largely instrumental in the development of the graphic methods which are widely used in physiological and psychological investigations.

ON JUNE 5, there died L. Hermann, of Königsberg, and H. Kronecker, of Bern, two physiologists whose investigations have been of psychological interest and importance.

THE nomination of Professor J. R. Angell as lecturer at the Sorbonne in 1915 has been approved by the University of Paris.

THE North Carolina School for Feeble-Minded, Kingston, N. C., was opened July 1, under the directorship of Dr. C. B. McNairy. It is expected that a psychological clinic will be established in connection with the school.

THE thirty-eighth annual meeting of the American Association for the Study of the Feeble-Minded was held in Columbus, O., June 18. Dr. H. H. Goddard was elected president.